

Schizaea pusilla Discovered in Peru

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Most American pteridologists are familiar with the rare "Curly Grass Fern," *Schizaea pusilla* Pursh, and are aware that it occurs only in scattered localities in northeastern North America. Thus far it has been found (with luck) in southern New Jersey and Long Island, New York, in Nova Scotia and Newfoundland, and on the Bruce Peninsula of Ontario (the latter unconfirmed since the original report, possibly erroneous). Yet recently it has been found on a mountainside in Central Peru! Specimens were collected by Dr. Robin Foster, Research Associate at Field Museum: Peru, Dept. Pasco, Oxapampa, Cordillera Yanachaga, Cerro Pajonal, 12 km SE of Oxapampa, 75°20'W, 20°35'S, 2700-2800 m, Foster 9065 (F, GH, MO, US, USM); shrubland on white sandstone, spongy sphagnum humus up to 2 m deep except where burned; plant colonizing sandy, wet landslide on steep slope; fertile frond brown, growing with *Drosera* and dwarf *Xyris*.

When Foster presented specimens to me for identification, I remarked that this looked like a new record for Peru, *S. fistulosa* Labill. var. *australis* (Gaud.) Fosb., and set it aside for further study. Later, during research on *Schizaea* in Peru, it became clear that the specimens were instead *S. pusilla*: in the size of the plant, in the number, shape and pubescence of the fertile segments, and as to the character of the spores. The latter were examined by Dr. Alice Tryon on a duplicate collection at GH, who explained (pers. comm.) that spores of this species are quite distinctive in size, shape, and dense pitting of the surface. (For further discussion of the distinctive types of spores in *Schizaea*, see Selling, 1944, and Tryon & Tryon, 1982, pp. 80-82.) The only way the Foster specimens differ from the North American collections is that sterile leaves are not conspicuously curled but are straight to merely flexuous. It is likely that some will consider this single character sufficient basis for specific or infraspecific distinction; however, blade habit can be somewhat variable, even in the Northern plants in which sterile leaves are occasionally flexuous, rarely straight. Actually *S. pusilla* is not so closely related to the Old World *S. fistulosa* and its variety *australis* from Chile and Argentina, which differ in the lack of pubescence on the sporangiophore and in the erose-lacerate margins of the fertile ultimate segments. It has greater affinity to *S. incurvata* Schkuhr (Surinam to Venezuela, Peru, northern Brazil), especially in the abundance of long, flexuous trichomes on the subentire fertile segment margins and among the sporangia. *Schizaea incurvata*, however, is a much larger fern, with once- to twice-forked fertile leaves, 2-4 times as many fertile segments, and unpitted spores.

The discovery of *S. pusilla* in Peru prompts interesting speculation as to the true distribution of the species. Should such a "disjunction" really be so surprising? May we not hypothesize that it is to be found in numerous other localities, throughout the neotropics, for example? One has only to attempt a search for it, even in reported stations in the United States, to discover how difficult it

is to locate. Robin Foster reports that his collection was made quite by accident, when he slipped and fell traversing the landslide area, only to find this strange little fern virtually "under his nose." Even then, only careful scrutiny produced a dozen more plants. How many more inconspicuous ferns can we expect to encounter in the tropics—either by luck or through assiduous search—such as species of Hymenophyllaceae and Ophioglossaceae? Even the larger *Schizaea incurvata* has been reported but once from Peru. Obviously, awareness of special soil requirements or habitat preferences can increase the likelihood of finding certain rare ferns. North American collection reports inform us that *S. pusilla* usually is found "in wet, sandy areas" and "in sphagnum bogs"; and the Foster collection proved no exception to this. That is not to say the fern is not found in other, e.g., drier or rocky habitats, but according to Selling (p. 81, 1944): "It is distinctly a species which prefers moisture and acid soils." By their very nature, general and mass collecting expeditions will yield but a small percentage of such fortunate discoveries; but special awareness and advance preparation can raise the odds!

LITERATURE CITED

- SELLING, O. H. 1944. Studies in the recent and fossil species of *Schizaea*, with particular reference to their spore characters. *Acta Horti Gothob.* 16:1-112.
- TRYON, R. M. AND A. F. TRYON. 1982. *Ferns and allied plants, with special reference to tropical America*. New York: Springer-Verlag.

REVIEW

"*Illustrations of Pteridophytes of Japan, Volume 4*," edited by S. Kurata and T. Nakaike with the cooperation of the Nippon Fernist Club. 1985. x + 852 pp. + folding map. University of Tokyo Press. Yen 13,000. ISBN 4-13-061064-3.

The hundred pteridophytes depicted in volume four of this ongoing series bring us to the halfway point in coverage of the perhaps 800 Japanese taxa. The format of previous volumes, all previously reviewed (*Amer. Fern J.* 72:11, 1982; 72:48, 1982; 74:6, 1984) is faithfully followed.

Among genera wholly or partly contained in this volume are *Angiopteris*, *Bolbitis*, *Cyathea*, *Dryopteris* (31 species and varieties), *Equisetum*, *Gymnocarpium*, *Plagiogyria*, *Pteris*, *Tectaria*, and *Woodsia*. I noted an error in the spelling of *Pteris dispar* Kunze, a species whose two cytotypes were intensively studied and mapped by N. Nakato in *J. Jap. Bot.* 56:200-205, 1981. The tetraploid is northern, with larger spores and smaller scales than the diploid. Some authors have treated *dispar* as a variety of *Pteris semipinnata* L.—M. G. PRICE, Herbarium, North University Building, University of Michigan, Ann Arbor, MI 48109.